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Division of Mycology and Disease Survey

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XX June 15, 1936 Number 11

IN THIS ISSUE

George H. Hepting describes a destructive disease of the mimosa tree in North and South Carolina, page 177.

The progress of the Dutch elm disease eradication campaign is reported on page 178.

R. E. Vaughan reports a yellowing of barley seedlings in Wisconsin believed to be due to potash deficiency, page 179.

The relative importance of sugarcane diseases in Puerto Rico is reported by James H. Jensen, page 179.

H. W. Anderson reports on apple diseases in Illinois, page 180.

Reports on apple scab are given for Massachusetts, New York, and Wisconsin, page 181.

Apple blight is also reported in Massachusetts, New York, and Wisconsin, page 182.

The occurrence of various rusts on apple in Massachusetts and New York is reported on page 182.

O. C. Boyd reports that winter injury and dwarf have caused severe damage to strawberries in Massachusetts, page 183.

Other reports on fruit diseases, page 183, include frog-eye on apple in Massachusetts and New York; peach diseases in Massachusetts; Fabraea blight on pear in New York; and black rot on grape in New York.

Miscellaneous reports on plant diseases, page 184, include downy mildew on alfalfa in Wisconsin; tomato late blight in New York; and leaf shoot blight of lilac in Massachusetts.

May weather, page 184.

A DESTRUCTIVE DISEASE OF THE MIMOSA TREE IN THE CAROLINAS

George H. Hepting

During the summer of 1935 the attention of the Division of Forest Pathology was called to the dying of mimosa trees (Albizzia julibrissin Duraz.) in and about Tryon, North Carolina. The disease was first observed by local residents about 1930. Since that time a great many mimosas, both old and young, have died and the disease seems to have been increasing year by year. Affected trees that externally appeared healthy in the spring have commonly wilted and lost all of their leaves by the middle of the summer. Death has apparently invariably followed such wilting.

A disease of mimosa, with symptoms identical to those of the Tryon disease, has been found at Wysacky, South Carolina, near Bishopville, and one affected tree has been found at Biltmore, North Carolina. While there has been no systematic scouting for this disease, many observers have been watching for it in the Southeast. So far as known the disease does not occur elsewhere in the United States.

A vascular wilt of the same tree species was described from the Batum region of Russia in 1920 (Voronikhin, N. N. Fusarium Albizziae nov. sp., as a possible cause of the destruction of the silkish acacia (Albizzia julibrissin) in the Batum Region. (Translated title.) Viestnik Tiflisskago Botanicheskago Sada 48: 1920). Judging from Voronikhin's detailed description, the Russian disease agrees very closely with the American. Unfortunately from the standpoint of comparison, no cultures were prepared from the diseased wood by Voronikhin.

The first external symptom of the disease in the Carolinas is a wilting of the leaves, causing them to hang downward from the twigs. The leaves then become dry and shrivelled, usually remaining green but sometimes becoming yellow. Soon after the leaves dry they fall from the tree. Death of the defoliated parts follows. If a branch bearing such wilted leaves is cut off, a brown discoloration will usually be evident in the outer sapwood, most commonly in the spring wood of the last annual ring. Such discoloration may often be found in trunks and branches before any wilting of leaves is evident. Sometimes the discolored zone appears as a complete ring, in cross-section, and sometimes it is in the form of longitudinal streaks which, in cross-section, appear as dots. In some cases the discoloration may be in the trunk but not in the branches exhibiting the wilt. In the few instances in which entire wilted trees have been dissected, the heaviest discoloration has appeared in the roots, diminishing in intensity up the stem and out the branches. This indicates the roots as a probable avenue of infection. The symptom complex is typical of the vascular wilt type of disease.

Investigations have not yet reached the point where the cause of this disease can be stated with certainty. However, a Fusarium of the

Oxysporum group of section Elegans has been regularly isolated from the discolored sapwood of wilting trees in the three places the disease has been found in the Carolinas, and inoculation experiments are now under way to test the pathogenicity of this fungus.

Considering the nature and destructiveness of this disease precautions should be taken to prevent its spread from the present known locations. As yet the manner in which the disease naturally spreads is not known. It would be unwise to move mimosa plants, even if apparently healthy, out of the affected areas at Tryon and Wysacky because many have been found showing the characteristic streaks in the wood without any external symptoms of the disease. If such trees were transported to new locations they might serve to establish the disease there. If any pruning or other work with tools is done on trees suspected of having the disease the tools should be disinfected with bichloride of mercury or some other effective disinfectant before using them on healthy mimosas. It is advisable to cut down and burn trees dying or dead as a result of this disease. Pruning or other wounds on mimosa should be disinfected immediately and covered with coal tar, asphaltum or some other serviceable coating. Before disinfecting the cambium should be protected with shellac.

Should any mimosa outside the reported locations of the disease show any of the symptoms herein described, it would be appreciated if sections about one foot long of the affected limbs or trunk are sent while still fresh either to the author, 223 Federal Building, Asheville, North Carolina, or to the Division of Forest Pathology, Bureau of Plant Industry, Washington, D. C. Specimens showing discoloration of the outer sapwood are specially desired. (Division of Forest Pathology, Bureau of Plant Industry.)

DUTCH ELM DISEASE ERADICATION

Reports of the Bureau of Entomology and Plant Quarantine for the period from May 3 to May 30, inclusive, show the number of confirmed and removed trees, as follows:

	Connecticut	New Jersey	New York	Outside	Total
May 3 to May 30					
Trees confirmed	0	29	3	0	32
Trees removed	0	29	4	0	33
Total to May 30					
Trees confirmed	138	9,450	4,792	56	14,436
Trees removed	138	9,450	4,792	56	14,436

YELLOWING OF BARLEY SEEDLINGS IN WISCONSIN

R. E. Vaughan

During the past two weeks several specimens of barley seedlings have been received at the departments of plant pathology, agronomy, or soils. In all cases the striking symptom was yellowing of first, second and third seed leaves. In most cases the lower stem was white showing freedom from fungus blight. The condition is most striking in soils cropped to potatoes or cabbage in 1935, or in general areas where soil is markedly low in available potash, i.e., Outagamie County.

Other grain seedlings do not show this type of injury except in rare cases. Prof. C. J. Chapman of our soils department reports that barley responds better than other grains to applications of potash-containing fertilizers. (Wisconsin Agricultural Experiment Station, June 1.)

SUGARCANE DISEASES IN PUERTO RICO

James H. Jensen

(Note: The following summary is quoted from "Notes on the present sugarcane disease situation in Puerto Rico" by James H. Jensen, Pathologist of the Puerto Rico Agricultural Experiment Station of the United States Department of Agriculture, published in Agricultural Notes (mimeographed) issued by the Station, Vol. 69, Apr. 15, 1936. The article reports the results of a survey recently completed by the Station.)

Mosaic is the most severe disease of sugarcane in Puerto Rico at present. It is being fairly effectively controlled in most localities by either roguing or the planting of resistant varieties. Some evidence was obtained that two or more strains of sugarcane-mosaic virus occur in Puerto Rico. The leaf-spot diseases, ring-spot (Leptosphaeria sacchari), brown-stripe (Helminthosporium stenospilum), and eye-spot (H. ocellum), are found in all sections of the Island, but because most varieties grown are not highly susceptible, no serious losses were caused by these diseases this year. Dry-top rot (Plasmodiophora vascularum), Fusarium pokkah boeng (F. moniliforme), red-stripe (Phytomonas rubrilineans) and red-rot (Colletotrichum falcatum) were observed present but not causing serious damage. Considerable damage due to what is believed to be manganese-deficiency disease was found in the south-coast region. Special precautions are advisable to guard against the careless importation of sugarcane seed pieces from other parts of the world and thus assist in the exclusion of serious sugarcane diseases known in countries outside of Puerto Rico.

APPLE DISEASES IN ILLINOIS

H. W. Anderson

Apple scab (Venturia inaequalis) is very light throughout the State. This seems to be due to the scarcity of over-wintering perithecia, to few periods of heavy spore discharge and to relatively dry weather in the larger apple growing section during critical periods.

Fruit infection with apple blotch (Phyllosticta solitaria) appeared in a light form about May 20 in southern Illinois. Due to dry weather, the damage will be light.

Blight (Bacillus amylovorus) appeared in a severe form on apples as twig and fruit blight rather late in the season (May 20 to June 1). It is very severe in northern and east central part of State, but there is very little in western Illinois in the large commercial orchards. It is moderately severe locally in southern Illinois.

Cedar galls were very abundant in southern Illinois this spring and the extended spore horns were conspicuous from the highways. Apple rust (Gymnosporangium juniperi-virginianae) on both leaves and fruit is now evident in this section. In western Illinois the rust is absent or very rare. This difference dates back to weather conditions in 1934. The extreme drought of that year was most severe in western Illinois, thus preventing infection of the cedars. In southern Illinois sufficient rains occurred to permit infection of the cedars and the formation of galls in 1935, which, in turn, accounts for the 1936 infection of the apples.

Another interesting feature of rust was the abundance of spore production on the cedars in western Illinois of the quince rust (G. clavipes). This fungus caused serious damage to apples in western Illinois in 1935. Since it is perennial on the cedars, it was not affected by the drought conditions of 1934. This was made evident by the very copious production of spore horns on the cedars this spring. Fortunately, weather conditions were evidently unfavorable for apple fruit infection and at present there is little evidence of the quince rust on the young fruit.

Severe winter injury to most fruit crops has become increasingly evident as the growing season has advanced. A comprehensive statement of the complex damage is not possible at this time. In general, the older apple orchards suffered throughout the State. There is also an evident correlation between heavy bearing and winter injury. Crotch injury is common in young orchards, while complete killing of limbs or entire trees is more generally seen in older orchards. (Illinois Agricultural Experiment Station, June 10).

REPORTS ON APPLE SCAB

MASSACHUSETTS: Apple scab was first observed on May 7, during early blossom, on crabapple, in Wilmington; resulting apparently from the April 15 to 16 rain while buds were in late delayed dormant condition. The next appearance was on May 13 to 15, when just a trace of infection was noticed in the college orchard, resulting apparently from the short infection period of April 21. The next series of scab spots, comparatively slight in extent, appeared on May 18 to 20 and apparently resulted from the rainy period of April 28 to 29. The heaviest infection of scab, however, appeared around May 22 to 25 and resulted from the very favorable infection period of May 3 to 4 after trees had developed rapidly from early pre-pink into full pink. In order to have the orchards adequately protected against that rain, the pre-pink spray had to go on not earlier than May 3, the May 2 sprays furnishing only partial protection and those on April 30 and May 1, practically no protection. However, growers who applied lime-sulfur on the afternoon of May 4 and on May 5, secured good control regardless of the timing of sprays prior to the rain of May 3 to 4. The rain of May 13 furnished good conditions for scab infection during late blossom in most orchards at low elevations, on new shoot growth that occurred during the hot weather, following the pink spray. The spots appeared around May 27 to 29 generally. The next crop of scab spots, rather sparing in general, appeared around June 2 to 4, and resulted from the rain of May 19. At present, the scab situation generally in commercial orchards is considerably more serious than in the average season, and lime-sulfur is being used extensively in the first and second cover sprays to burn it out. (O. C. Boyd, June 5.)

NEW YORK: Reports from the various counties in the State College of Agriculture Weekly News Letter for May 18, May 25, June 1, and June 8 indicate that while there is some scab infection on both leaves and fruit especially in eastern New York the disease is not yet abundant. In Niagara County in western New York according to J. G. Goodrich, no scab had been seen up to June 8, even on unsprayed crabs.

ILLINOIS: See page 180.

WISCONSIN: A light infection was just appearing in Crawford County and Columbia County on May 25; in Dane County on May 29. Unusually dry weather both before and after the blooming period, May 10 to 17, seems to have retarded the development of the fungus. Rain is falling today. (R. E. Vaughan, June 1.)

REPORTS OF BLIGHT ON APPLE

MASSACHUSETTS: Blight was first noticed on May 30 in South Amherst as both spur and twig blight, the infection being evident for at least four or five days. It is very scarce this year as compared with some seasons. (O. C. Boyd, June 5.)

NEW YORK: A serious amount of twig and blossom blight has developed in a number of apple orchards throughout the Hudson Valley, according to reports in the State College of Agriculture Weekly News Letter for June 8. The earliest date of appearance mentioned was May 28 in Dutchess County. Rhode Island Greening, Northern Spy, Ben Davis and Alexander were said to be most severely affected in various counties.

ILLINOIS: See page 180.

WISCONSIN: Blossom blight and twig blight were beginning to show in Crawford County, May 21 to 25. Twig blight on pear was observed on a specimen sent in from Fond du Lac County. (R. E. Vaughan, June 1.)

RUST ON APPLE IN MASSACHUSETTS AND NEW YORK

MASSACHUSETTS: Gelatinization of galls and cankers occurred generally first during the rain of May 3 to 4. By May 15 to 20, leaf spots and fruit infections were evident. In many orchards, the fruit of Gravenstein is badly injured by the quince rust, some having dropped as early as May 30 to June 2 as a result of the heavy infection on the fruit and the fruit stalk. (O. C. Boyd, June 5.)

NEW YORK: The following reports are from the State College of Agriculture Weekly News Letter for the dates indicated.

Orange Co. (C. W. DuBois). Cedar rust is serious on foliage in orchards in the southern part of the county, but little is showing up in the northern part. (June 8.)

Rockland Co. (W. J. Clark). Cedar rust lesions on Rose and Winter Banana foliage first observed on May 18. A very serious infection is apparent in many orchards. (May 25.)

Both quince rust and apple rust infections have been found on apples this week. (June 8.)

Dutchess Co. (J. A. Evans). Apple rust lesions were observed on fruit on June 1. (June 8.)

Ulster Co. (C. G. Small). Cedar rust lesions were first observed on apple leaves June 1. The infection appears to be heavy on some Delicious and Romes. A few spots can be found on the leaves of McIntosh. (June 8.)

SEVERE DAMAGE TO STRAWBERRIES IN MASSACHUSETTS FROM WINTER INJURY AND DWARF

O. C. Boyd

Not only on Cape Cod, but elsewhere in the State there appears to be decidedly more injury to plants in the bearing beds than in the average year. While most of the loss is confined to the original sets, or "mother" plants, yet in some places the runner plants also are affected. Such injury is manifested by the dying-out of individual plants after they had made considerable growth this spring. However, such plants showed dying of the old leaves and abnormal growth of new ones at the time growth first started this season, around April 10 to 15.

In some cases, the injury was associated with plants that had been weakened by black root infection or other set-back factors. In others, the root system appeared to be entirely normal. But in all such instances, there was present a decided discoloration of the vascular tissue throughout the stem. In the more advanced, or earlier killed plants, the bark and pith also were discolored or dead. On Cape Cod, the injury was most conspicuous in low spots of the fields where water and ice had stood, particularly in beds where the vigor of plants in general was noticeably low.

By the time strawberry plants in the Falmouth section on Cape Cod were approaching early blossom, dwarf (Aphelenchoides fragariae) was conspicuous in several beds visited on May 8. It was observed in fields where it had not been a factor in past years. On other farms, where the disease had been damaging in past seasons, crop rotation and securing plants from outside sources either greatly reduced the disease or appeared to eliminate it entirely. One field showed at least 50 percent of the plants affected. The disease was observed in Dighton on May 21. This is the first report outside of Cape Cod. (Massachusetts State College, May 20 and June 5.)

OTHER REPORTS ON FRUIT DISEASES

FROG-EYE LEAF SPOT (PHYSALOSPORA OBTUSA) ON APPLE IN MASSACHUSETTS AND NEW YORK: O. C. Boyd reports that frog-eye first appeared in Massachusetts about May 12 to 15, and was very conspicuous in many orchards by May 15 to 18 (June 5). According to J. A. Evans black rot leaf infection is plentiful on Baldwin foliage in Dutchess County, New York (June 8).

PEACH DISEASES IN MASSACHUSETTS: Peach bacteriosis (Bacterium pruni) in the form of twig and spur cankers and blossom blight was observed in back yard trees in Dartmouth on May 28; also an abundance of leaf curl (Taphrina deformans). (O. C. Boyd, June 5.)

FABRAEA BLIGHT ON PEAR IN DUTCHESS COUNTY, NEW YORK: Fabraea maculata was observed on pear fruits on June 1. (J. A. Evans, June 8.)

BLACK ROT ON GRAPE IN ROCKLAND COUNTY, NEW YORK: Black rot (Guignardia bidwellii) is now showing up on grape leaves. (W. J. Clark, June 8.)

MISCELLANEOUS REPORTS ON PLANT DISEASES

DOWNY MILDEW ON ALFALFA IN WISCONSIN: Downy mildew (Peronospora trifoliorum) was observed in Sheboygan County, May 26. The plants were in full dense stand and not yet in bud. Shaded leaves were showing scattered spots of mildew. No economic loss was indicated as general weather condition has been too dry. (R. E. Vaughan, June 1.)

TOMATO LATE BLIGHT IN NEW YORK: Late blight (Phytophthora infestans) was found in Nassau County on tomato plants shipped in from North Carolina. (M. C. Richards, June 8.)

LEAF AND SHOOT BLIGHT OF LILAC IN MASSACHUSETTS: Lilac leaf and shoot blight, due to a species of Gloeosporium, was observed in Dartmouth on May 28. The symptoms were similar to those of bacterial blight. (O. C. Boyd, June 5.)

MAY WEATHER

(The maps, figures 36 and 37, and discussion of May weather are taken from the Weekly Weather and Crop Bulletin for the week ending June 2.)

While there were a few abnormally cool periods in the East, especially around the middle of the month in the Lake region and the Northeast, and again near its close in the East, the general run of temperature for May 1936 was to above normal in practically all parts of the country. The cool periods resulted in considerable damage to tender vegetation and tree fruits, especially in Michigan and New England, and local damage elsewhere, but there were no generally harmful frosts. Precipitation was heavy in a considerable southwestern area and along the north Pacific coast, but elsewhere the month was decidedly dry in most districts. Thus, on the whole, May was warm and dry.

Figure 36 shows that the monthly mean temperatures were below normal locally in the Southwest, but in other sections they were above normal, ranging mostly from 1° above in Gulf districts to as much as 8° to 10° above in the Northwestern Plains. In the central valleys the plus departures from normal were mostly from 4° to 6°.

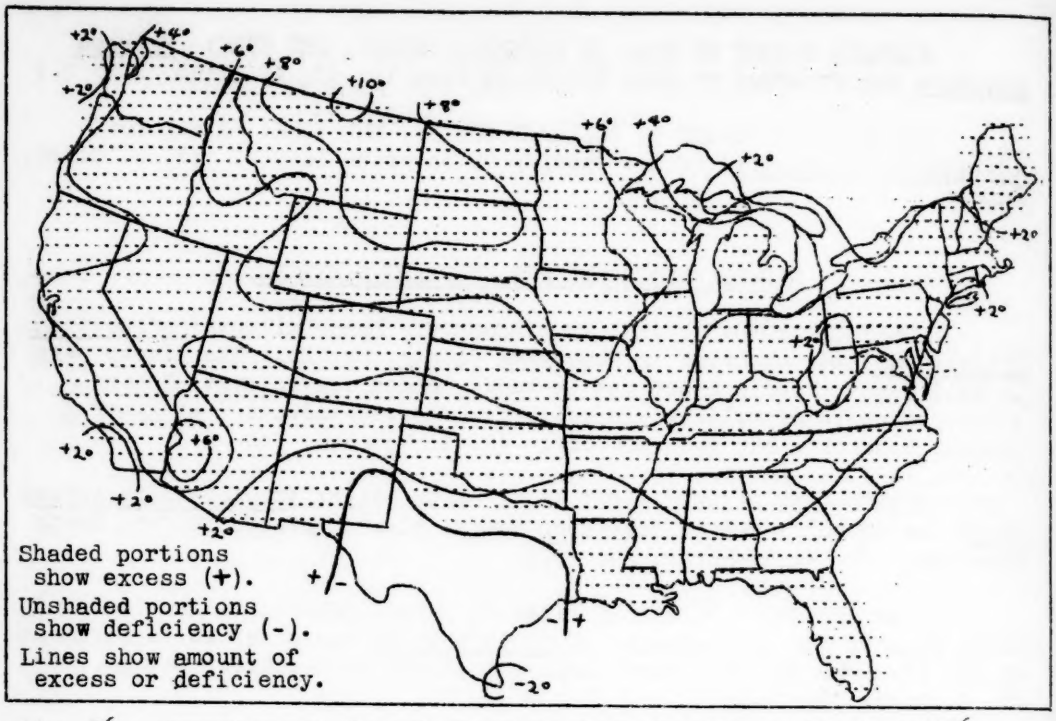

Fig. 36. Departure of Mean Temperature from the Normal for May 1936.

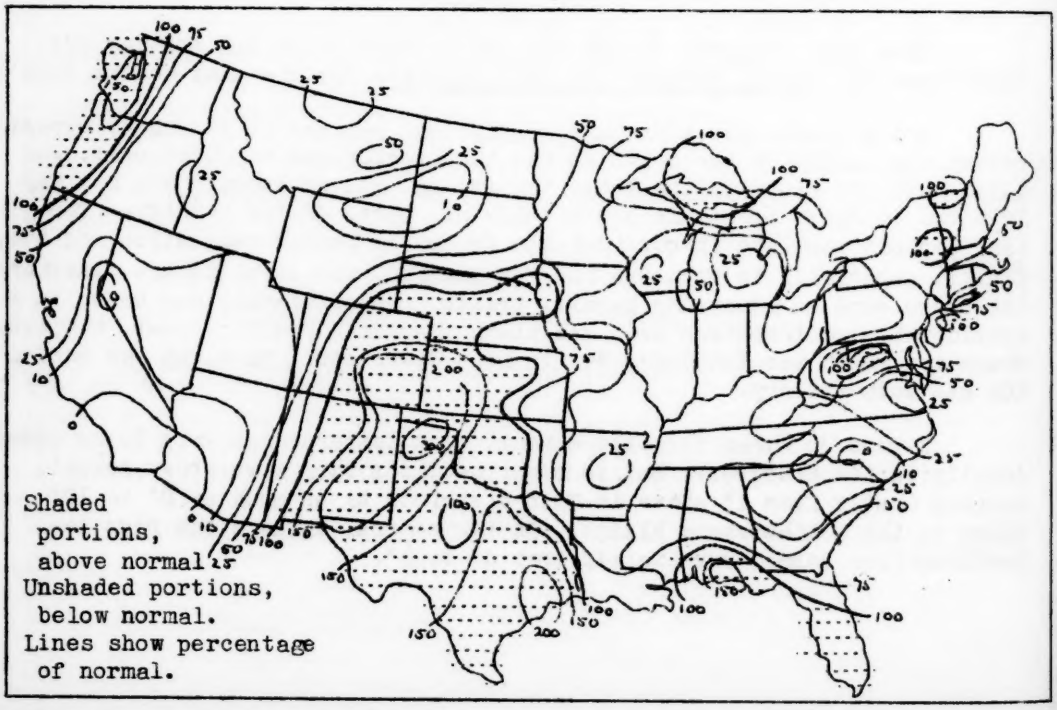

Fig. 37. Percentage of Normal Precipitation for May 1936.

Figure 37 shows that precipitation varied greatly in different areas, even in nearby sections. It ranged from much above normal to markedly deficient, the latter predominating. The Southwest had heavy rains; in many places the monthly totals were from one and a half to more than three times the normal, the heaviest falls being in the Southwestern Plains area. In marked contrast, the Nothern Plains were very dry, with some stations reporting inappreciable rainfall for the entire month.

Also from the Mississippi Valley eastward, except very locally, it was one of the driest Mays of record, especially in the Southeast, where the monthly totals of rainfall over a large area ranged from less than 10 to scarcely 25 percent of normal; some localities in the Southeast had an unprecedentedly dry May. In fact, only a very few sections from the Mississippi Valley eastward had as much as half the normal rainfall. Marked contrasts are shown in the middle Atlantic area, Washington, D. C., having nearly one and one-half times the normal, while nearby Richmond, Virginia, received only 14 percent of normal, having the driest May of record.